Featured Keynote Lecture

## Dr. Holger Hoos

GECCO 2016 Denver Saturday July 23 9:00am Grand Mesa Ballroom DEF

## Taming the Complexity Monster or: How I learned to Stop Worrying and Love Hard Problems

with Holger H. Hoos Professor of Computer Science Peter Wall Institute for Advanced Studies University of British Columbia, Canada

Holger H. Hoos is a Professor of Computer Science and a Faculty Associate at the Peter Wall Institute for Advanced Studies at the University of British Columbia (Canada). His main research interests span empirical algorithmics, artificial intelligence, bioinformatics and computer music. He is known for his work on the automated design of high-performance algorithms and on stochastic local search methods. Holger is a co-author of the book "Stochastic Local Search: Foundations and Applications", and his research has been published in numerous book chapters, journals, and at major conferences in artificial intelligence, operations research, molecular biology and computer music.







In this talk, Hoos will focus on one particular type of complexity that has been of central interest to the evolutionary computation community, to artificial intelligence and far beyond, namely computational complexity, and in particular, NP-hardness. Hoos will investigate the question to which extent NP-hard problems are as formidable as is often thought, and present an overview of several directions of research that aim to characterise and improve the behaviour of cutting-edge algorithms for solving NP hard problems in a pragmatic, yet principled way. For prominent problems ranging from propositional satisfiability (SAT) to TSP and from AI planning to mixed integer programming (MIP), Hoos will demonstrate how automated analysis and design techniques can be used to model and enhance the performance characteristics of cutting-edge solvers, sharing some surprising insights along the way.